



Docket No. 1422-0613P  
(PATENT)

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In Re Application of: : Confirmation No.: 5076  
Yoshiaki OSHIMA et al. : Group Art Unit: 1755  
Serial No. 10/726,581 : Examiner: MARCHESCHI,  
Filed: December 4, 2003 : Michael A.  
For: POLISHING COMPOSITION

DECLARATION UNDER 37 C.F.R. 1.132

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Yoshiaki OSHIMA, residing at Wakayama-ken, Japan, hereby declare  
and state as follows:

1. That I am one of the co-inventors of U.S. Application Serial No.  
10/726,581 filed on December 4, 2003. I am thoroughly familiar with the  
contents of said Application, its prosecution before the United States Patent and  
Trademark Office and the references cited therein.
2. That I am a graduate of Kyoto University, Department of  
Engineering and received a master's degree in the year 1996, majoring in  
chemistry.
3. That I have been employed in Kao Corporation in the year 1996  
and have been assigned to the Research Laboratories.
4. That I have been involved in the research and development of  
polishing composition since the year 1998.

Serial No. 10/726,581

5. That the following calculation was conducted by myself or under my direct supervision and control in order to verify that particle size distribution on volume-base cannot be determined according to a partial disclosure of the particle size distribution on number-base.

### EXPERIMENTAL METHOD

As to the group of particles composed of twenty particles shown in the following Tables A and B, of which particle size is only different in Particle No. 20 between the two groups (Table A: 68 nm; Table 2: 120 nm), D10, D50 and D90 of each group of particles on volume-base or on number-base were obtained. Here, D10, D50 and D90 are respectively particle sizes of which cumulative particle size distribution counted from a smaller particle size is 10%, 50%, and 90%.

Table A

particle No.	particle size (nm)	cumulative particle size distribution		volume of a particle (nm <sup>3</sup> )	cumulative volume (nm <sup>3</sup> )	cumulative particle size distribution	
		(number base %)				(volume base %)	
1	40	5		33510	33510	1.9	
2	43	10	D10	41630	75140	4.3	
3	45	15		47713	122853	7.0	
4	46	20		50965	173818	10.0	D10
5	47	25		54362	228180	13.1	
6	48	30		57906	286085	16.4	
7	49	35		61601	347686	19.9	
8	50	40		65450	413136	23.7	
9	51	45		69456	482592	27.6	
10	55	50	D50	87114	569706	32.6	
11	58	55		91952	661658	37.9	
12	57	60		96967	758625	43.5	
13	58	65		102160	860785	49.3	
14	58	70		107536	968322	55.5	D50
15	60	75		113097	1081419	62.0	
16	61	80		118847	1200266	68.8	
17	62	85		124788	1325054	75.9	
18	62	90	D90	124788	1449842	83.1	
19	63	95		130924	1580767	90.6	D90
20	68	100		164636	1745403	100.0	

Serial No. 10/726,581

Table B

particle No.	particle size (nm)	cumulative particle size distribution		volume of a particle (nm <sup>3</sup> )	cumulative volume (nm <sup>3</sup> )	cumulative particle size distribution	
		(number base %)				(volume base %)	
1	40	5		33510	33510	1.3	
2	43	10	D10	41630	75140	3.0	
3	45	15		47713	122853	4.9	
4	46	20		50865	173818	7.0	
5	47	25		54362	228180	9.2	
6	48	30		57906	286085	11.5	D10
7	49	35		61601	347686	14.0	
8	50	40		65450	413136	16.6	
9	51	45		69456	482592	19.4	
10	55	50	D50	87114	569706	22.9	
11	56	55		91952	661658	26.6	
12	57	60		96967	758825	30.5	
13	58	65		102160	860785	34.6	
14	59	70		107536	968322	38.0	
15	60	75		113097	1081419	43.5	
16	61	80		118847	1200266	48.3	
17	62	85		124788	1325054	53.3	D80
18	62	90	D90	124788	1449842	58.3	
19	63	95		130924	1580767	63.6	
20	120	100		804779	2485545	100.0	D90

## RESULTS

In the group of Table A, D10, D50 and D90 on number base were 43 nm, 55 nm and 62 nm, respectively, and D10, D50 and D90 on volume base were 46 nm, 59 nm and 63 nm, respectively.

Whereas, in the group of Table B, D10, D50 and D90 on number base were 43 nm, 55 nm and 62 nm, respectively, and D10, D50 and D90 on volume base were 48 nm, 62 nm and 120 nm, respectively.

## DISCUSSION

It can be seen from the above that the relationship between the cumulative particle size distribution on number-base and the cumulative particle size distribution on volume-base changes dramatically due to a difference in particle sizes of a part of the entire particles.

Serial No. 10/726,581

In other words, when particle sizes of the entire particles are partially unknown, the particle size distribution on volume-base cannot be determined according to a partial disclosure of the particle size distribution on number-base.

6. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

7. Further declarant saith not.

Yoshiaki Oshima

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Yoshiaki OSHIMA

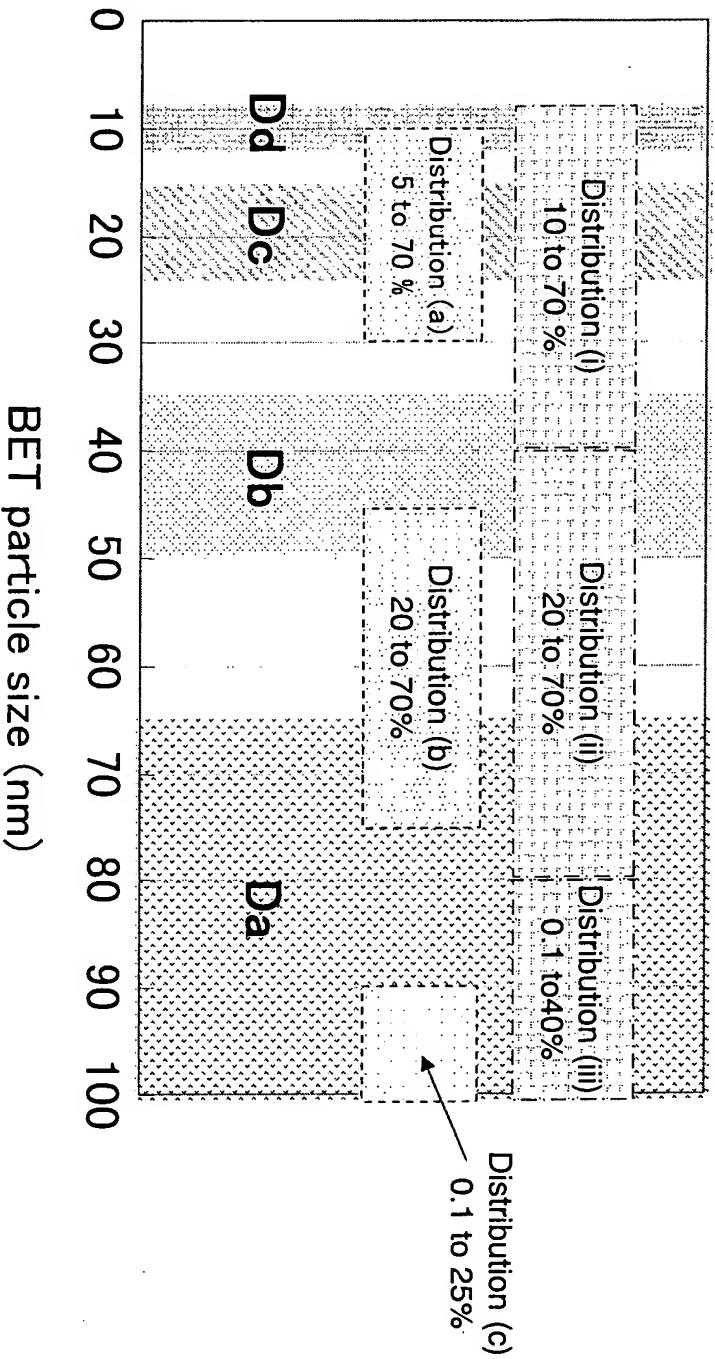
April 4, 2006

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Date

# Exhibit A

## Particle size distribution of Ota et al.



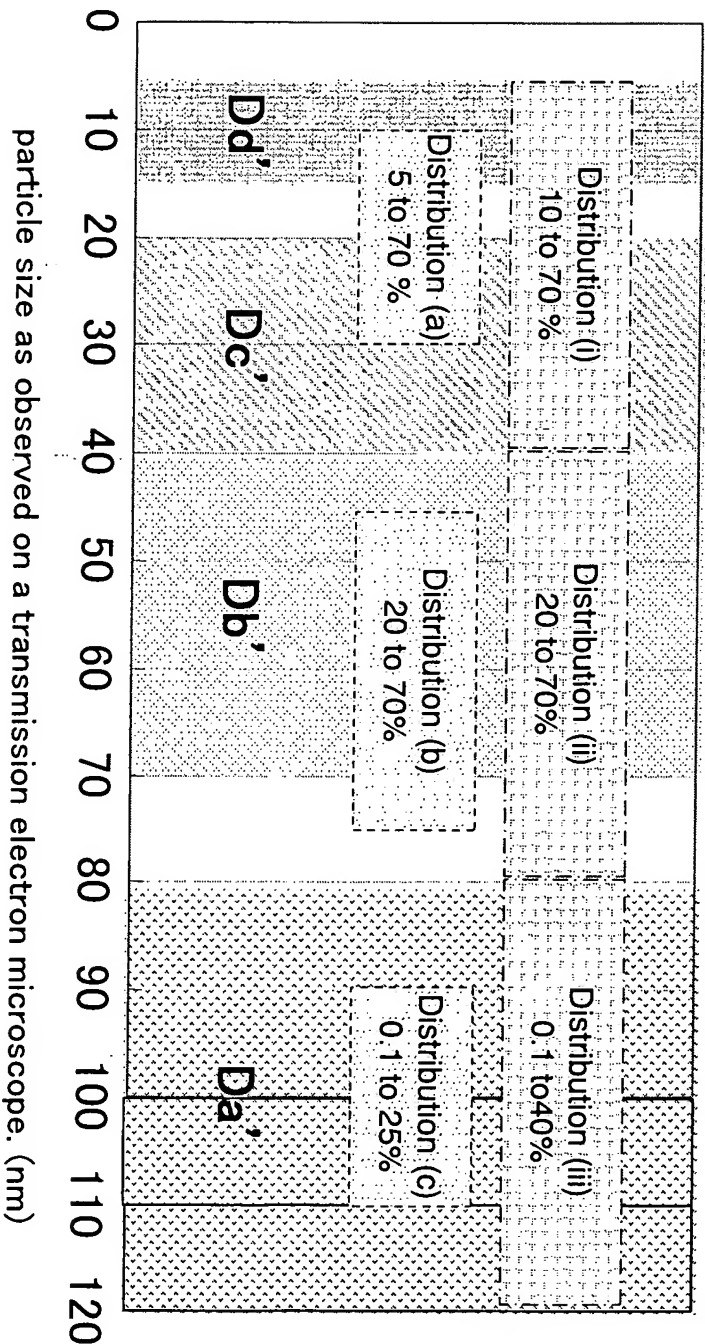
embodiment 1]	Dc	Da
embodiment 2]	Dd Dc	Da
embodiment 3-1]	Dc Db	
embodiment 3-2]	Dd Db	

\* Da,Db,Dc, or Dd is a mean particle size of a monomodal particle group.

\* The distribution (i), (ii), and (iii), and the distribution (a), (b), and (c) show a particle size distribution defined in claim 7 of the present invention.

# Exhibit B

Particle size distribution of Ota et al.



【embodiment 1】		$Dc'$		$Da'$
【embodiment 2】	$Dd'$	$Dc'$		$Da'$
【embodiment 3-1】		$Dc'$	$Db'$	
【embodiment 3-2】	$Dd'$		$Db'$	

\*  $Da'$ ,  $Db'$ ,  $Dc'$ , or  $Dd'$  is a primary particle size of 90% or more particles of a monomodal particle group.

\* The distribution (i), (ii), and (iii), and the distribution (a), (b), and (c) show the particle size distribution defined in claim 7 of the present invention.